Written Demand for Trial

(137,500¥)

February 13, 2003

To Director-General of the Patent Office

1. Identification of Case: Trial for Invalidation of Patent No. 3315498

2. Number of Claims Under Appeal: 16

3. Demandant

Address: Klybeckstrasse 141, 4057 Basel, Switzerland

Name: Ciba Specialty Chemicals Holding Inc.

4. Attorney:

Address: SVAX TS Bldg., 1-22-12 Toranomon,
Minato-ku, Tokyo 105-0001

Name: Hajime Tsukuni, Patent Attorney (7866)

Tel.: (3502)7212

Address: same as above

Name: Fumio Shinoda, Patent Attorney (7522)

5. Demandee

Address: 3-2-5 Kasumigaseki, Chiyoda-ku, Tokyo

Name: Mitsui Chemicals Inc.

Address: 1-43 Yugechominami, Yao-shi, Osaka-fu

Name: Yamamoto Chemicals Inc.

6. Relief Sought in the Appeal

We hereby request the trial decision to invalidate the inventions in Claims 1 through 16 set forth in the Specification of Patent No. 3315498 and to find the Demandee liable for the trial costs.

7. Grounds of the Appeal

7-1. Application Processing

Application	November 29, 2003 (Patent Application H5-297922)
Application laid-open	April 11, 1995 (KOKAI H7-98887A)
Priority Date 1	December 2, 2002
Priority Date 2	April 28, 2003
Amendment	June 3, 1999
Notice of Reasons for Rejection	March 12, 2001 (Dispatch)
Argument and Amendment	May 11, 2001
Notice of Reasons for Rejection	March 13. 2002 (Dispatch)
Amendment	March 28, 2002
Decision to Grant Patent	May 8, 2002

Registration	June 7, 2002
Patent Publication	August 19, 2002
	(Patent No. 3315498)

7-2. Key Points in Reasons for Invalidating Patent

7-2-1. Lack of Novelty and/or Inventive Step

(1) The inventions in Claims 7, 8, and 14 are inventions described in any of Exhibits A1 through A4, or could have been readily found by one having ordinary skill in the art based on inventions described in any of Exhibits A1 through A4. The patent relating to these inventions violates the provisions in the Patent Law, Article 29, Section 1-3 or Article 29, Section 2, and therefore should be invalidated pursuant to the provisions of the Patent Law, Article 123, Section 1-2.

(2) The inventions in Claims 9 and 11 are inventions described in Exhibits A3 or A4, or could have been readily found by one having ordinary skill in the art based on inventions described in Exhibits A3 or A4. The patent relating to these inventions violates the provisions in the Patent Law, Article 29, Section 1-3 or Article 29, Section 2, and therefore should be invalidated pursuant to the provisions of the Patent Law, Article 123, Section 1-2.

(3) The inventions in Claim 12 is an invention described in Exhibit A3, or could have been readily found by one having ordinary skill in the art based on the invention described in Exhibit A3. The patent relating to this invention violates the provisions in the Patent Law, Article 29, Section 1-3 or Article 29, Section 2, and therefore should be invalidated pursuant to the provisions of the Patent Law, Article 123, Section 1-2.

(4) The inventions in Claims 13, 15, and 16 are inventions described in Exhibits A1 or A2, or could have been readily found by one having ordinary skill in the art based on inventions described in Exhibits A1 or A2. The patent relating to these inventions violates the provisions in the Patent Law, Article 29, Section 1-3 or Article 29, Section 2, and therefore should be invalidated pursuant to the provisions of the Patent Law, Article 123, Section 1-2.

(5) The inventions in Claims 1 through 6 and 10 could have been readily found by one having ordinary skill in the art based on commonly known inventions described as prior art in the Specification of the Invention in question and inventions described in Exhibits A1 or A2. The patent relating to these inventions violates the provisions in the Patent Law, Article 29, Section 2, and therefore should be

invalidated pursuant to the provisions of the Patent Law, Article 123, Section 1-4.

7-2-2. Lack of Novelty

The inventions in Claims 1 through 16 could have been readily found by one having ordinary skill in the art based on the invention described in Exhibit A5 or inventions described in Exhibits A5 and A6. The patent relating to these inventions violates the provisions in the Patent Law, Article 29, Section 2, and therefore should be invalidated pursuant to the provisions of the Patent Law, Article 123, Section 1-2.

7.2.3. Lack of Novelty Resulting from Lack of Entitlement to Priority Right

The inventions in Claims 1 through 16 are not entitled to priority right and are the same as the invention described in Exhibit A10. The patent relating to these inventions violates the provisions in the Patent Law, Article 29, Section 2, and therefore should be invalidated pursuant to the provisions of the Patent Law, Article 123, Section 1-2.

7.2.4. Improper Description in Specification

Claims 1 through 16 cannot be regarded as describing only matters which are indispensable to the constitution of the invention for which the patent is being sought, and fail to comply with the requirements set forth in the Patent Law, Article 36, Section 5-2, nor can the object, features, and effects of the inventions in those claims be regarded as having been described in sufficient detail to allow one having ordinary skill in the art to readily work the invention. The patent relating to these inventions therefore fails to comply with the provisions of the Patent Law, Article 36, Section 4, and therefore should be invalidated pursuant to the provisions of the Patent Law, Article 123, Section 1-2.

7-3. Reasons Why the Patent Should Be Invalidated

7-3-1. Description of the Patented Invention at Issue

As described in the Claims of the Specification in the patent at issue, the invention is:

[Claim 1] An optical information recording medium comprising a transparent substrate provided, in the following order, with a recording layer comprising an organic dye allowing information to be written by means of laser light, a reflecting layer, and a protecting layer, said optical information recording medium characterized in

that the recording layer contains a pit-edge controlling agent comprising a thermal decomposition accelerator for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C, said thermal decomposition accelerator being selected from metallocenes and derivatives thereof (this invention is hereinafter referred to as "Invention 1").

[Claim 2] An optical information recording medium according to Claim 1, wherein the thermal decomposition accelerator lowers the temperature at which thermal decomposition of the organic dye begins by at least 25°C (this invention is hereinafter referred to as "Invention 2").

[Claim 3] An optical information recording medium according to Claim 1 or 2, wherein the metallocenes and derivatives thereof are ferrocenes and derivatives thereof (this invention is hereinafter referred to as "Invention 3").

[Claim 4] An optical information recording medium according to Claim 3, wherein the ferrocenes and ferrocene derivatives are any of ferrocene, benzoyl ferrocene, 1,1'-dimethylferrocene, n-butylferrocene, cyclohexenylferrocene, and vinylferrocene (this invention is hereinafter referred to as "Invention 4").

[Claim 5] An optical information recording medium according to any of Claims 1 through 4, wherein the recording dye is a phthalocyanine compound (this invention is hereinafter referred to as "Invention 5").

[Claim 6] An optical information recording medium according to Claim 5, wherein the phthalocyanine compound is a halogenated phthalocyanine compound (this invention is hereinafter referred to as "Invention 6").

[Claim 7] Composition for a recording layer in an optical information recording medium, comprising a pit-edge controlling agent that comprises an organic dye allowing information to be written by means of laser light and a thermal decomposition accelerator for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C, said composition characterized in that said thermal decomposition accelerator is selected from metallocenes and derivatives thereof (this invention is hereinafter referred to as "Invention 7").

[Claim 8] A composition according to Claim 7, wherein the thermal decomposition accelerator lowers the temperature at which thermal decomposition of the organic dye begins by at least 25°C (this invention is hereinafter referred to as "Invention 8").

[Claim 9] A composition according to Claim 7 or 8, wherein the metallocenes and derivatives thereof are ferrocenes and derivatives thereof (this invention is hereinafter referred to as "Invention 9").

[Claim 10] A composition according to Claim 9, wherein the ferrocenes and ferrocene derivatives are any of ferrocene, benzoyl ferrocene, 1,1'-dimethylferrocene, n-butylferrocene, cyclohexenylferrocene, and vinylferrocene (this invention is hereinafter referred to as "Invention 10").

[Claim 11] A composition according to any of Claims 7 through 10, wherein the recording dye is a phthalocyanine compound (this invention is hereinafter referred to as "Invention 11").

[Claim 12] A composition according to Claim 11, wherein the phthalocyanine compound is a halogenated phthalocyanine compound (this invention is hereinafter referred to as "Invention 12").

[Claim 13] A composition according to any of Claims 7 through 12, which is a composition for a recording layer in an optical information recording medium, wherein a recording layer comprising an organic dye is formed into a film by means of a coating method using an organic dye film-forming solvent, the pit-edge controlling agent being

soluble in said film-forming solvent (this invention is hereinafter referred to as "Invention 13").

[Claim 14] A composition for a recording layer in an optical information recording medium, wherein a composition according to any of Claims 7 through 13 is dissolved in a solvent (this invention is hereinafter referred to as "Invention 14").

[Claim 15] A method for producing an optical information recording medium, comprising the steps of dissolving a composition according to any of Claims 7 through 13 in a solvent to form a coating solution, coating a transparent substrate with the resulting solution, and forming a recording layer comprising an organic dye and a pit-edge controlling agent (this invention is hereinafter referred to as "Invention 15").

[Claim 16] A method for producing an optical information recording medium, comprising the steps of coating a transparent substrate with a composition according to Claim 14, and forming a recording layer comprising an organic dye and a pit-edge controlling agent (this invention is hereinafter referred to as "Invention 16").

The patented invention in question has the merit of making it possible to provide CD-R media with better deviation and jitter properties, lower error rates, and

favorable recording properties as a result of the application of the above structure (paragraph 0115 in the Specification of the patent in question).

7-3-2. Lack of Novelty and/or Inventive Step

7-3-2-1. Description of Evidence

(1) Exhibit A1 (Japanese Unexamined Patent Application (Kokai) S63-209042)

Exhibit A1 relates to an optical information recording carrier by which information is optically recorded and played back by an energy beam such as a laser beam (page 1, 4th to 3rd lines from the bottom in lower left column, and Example 2).

The optical information recording carrier described in Exhibit A1 has an optical recording layer comprising an organic dye thin film, examples of such organic dyes including anthraquinone derivatives, cyanine compounds, pyrylium compounds, xanthene compounds, triphenylmethane compounds, and azo dyes (page 4, lines 5 to 14 in upper left column).

The optical recording layer described in Exhibit A1 may comprise a dye composition with several wt% to 50 wt% quencher mixed therein relative to the above dye. Such a quencher may be selected, in consideration of dye and

solvent compatibility, from various metal chelate compounds, particularly multidentate ligands, the central metal of which is Zn, Cu, Ni, Cr, Co, Mn, Pd, or Zr, such as biscyclopentadienyl ligands (page 4, line 15 of upper left column, to line 1 of lower left column).

It is stated in Example 2 of Exhibit A1 that a laser recording optical disc is obtained by spin coating a 2 wt% dichloroethane solution comprising a dye and 20 wt% quencher added relative to the dye.

(2) Exhibit A2 (Japanese Unexamined Patent Application (Kokai) S63-168393)

Exhibit A2 relates to an optical information recording medium suitable for optical write recording by lasers or the like (page 3, 4th to 3rd lines from bottom of upper left column).

The optical information recording medium described in Exhibit A2 has a recording layer comprising a pyrylium compound and metal chelate compound (page 4, 3rd line from bottom in upper left column to line 1 in upper right column).

Examples of metal chelate compounds in the recording layer described in Exhibit A2 can include biscyclopentadiene-based metal chelate compounds (page 22,

lines 6 to last line in upper right column), and the metal chelate compound is contained in a proportion of 1 to 60 wt% relative to the total amount of recording material forming the recording layer (page 23, lines 4 to 8 of lower right column).

The recording layer described in Exhibit A2 is coated by a spinner coating method or the like using an organic solvent (page 24, lines 4 to 9 of lower left column).

It is stated in Example 4 of Exhibit A2 that a laser light writable recording medium is produced by using a solvent to form a recording layer out of a material comprising a combination of 80 wt% pyrylium compound and 20 wt% biscyclopentadiene compound with Zr as the central metal (Table 1).

(3) Exhibit A3 (Japanese Unexamined Patent Application (Kokai) H2-43396)

Exhibit A3 relates to a method for producing a thin film of a metal phthalocyanine complex suitable for semiconductor laser recording media or the like. The thin film is produced from a micelle solution comprising a metal phthalocyanine complex and a ferrocene derivative (Claim 1, and page 1, line 14 of the lower left column to line 2 of the lower right column).

In Examples 1 and 2 of Exhibit A3, it is stated that a thin film of a metal phthalocyanine complex which can be used for recording media involving the use of a semiconductor laser was produced from a micelle solution comprising the addition of 0.099 g ferrocene derivative and 1.0 g magnesium phthalocyanine or 0.198 g ferrocene derivative and 1.0 g chlorinated aluminum phthalocyanine .

(4) Exhibit A4 (Japanese Unexamined Patent Application (Kokai) H2-103190)

Exhibit A4 relates to a method for forming an organic compound thin film as the optical recording material for optical recording media (page 1, 4th to 2nd lines from bottom of lower left column). This thin film is produced from a micelle solution comprising an organic dyes such as an indolenine-based cyanine dye, phthalocyanine dye, or naphthalocyanine dye, and a surfactant such as ferrocenyl PEG (page 2, lines 1 to 4 in upper left column to lines 1 to 10 in upper right column).

In the examples in Exhibit A4, it is stated that an organic dye film for optical discs is formed from a micelle solution comprising 2mM ferrocenyl PEG and 7 mM indolenine-based cyanine dye.

7-3-2-2. Comparison of Patented Invention and Inventions Described in Evidence

(1) Claim 7

Invention 7 of the patent in question can be broken down as follows:

7A: it is a composition for a recording layer in an optical information recording medium;

7B: the recording layer composition includes an organic dye allowing information to be written by means of laser light; and

7C: the recording layer composition includes a pit-edge controlling agent comprising a thermal decomposition accelerator for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C, and the thermal decomposition accelerator is selected from metallocenes and derivatives thereof.

((1)) Comparison With Invention Described in Exhibit A1

The invention described in Exhibit A1 can be broken down as follows:

7A: it is a composition for a recording layer in an optical information recording carrier;

7B: the recording layer composition comprises an organic dye such as anthraquinone derivatives, cyanine

compounds, pyrylium compounds, xanthene compounds, triphenylmethane compounds, and azo dyes; and

7C′: the recording layer composition comprises an organic dye quencher in a proportion of several wt% to 50 wt% relative to the organic dye, and the quencher is selected from biscyclopentadienyl ligands, the central metal of which is Zn, Cu, Ni, Cr, Co, Mn, Pd, or Zr.

Invention 7 of the patent in question and the invention described in Exhibit A1 appear to be different in that the former has the constituent feature 7C (including a pit-edge controlling agent comprising a thermal decomposition accelerator, selected from metallocenes and derivatives thereof, for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C), whereas the latter has the constituent feature 7C′ (comprising an organic dye quencher selected from biscyclopentadienyl ligands, the central metal of which is Zn, Cu, Ni, Cr, Co, Mn, Pd, or Zr, in a proportion of several wt% to 50 wt% relative to the organic dye).

However, the metallocenes and derivatives thereof in Invention 7 of the patent in question include biscyclopentadienyl ligands, the central metal of which is Zn, Cu, Ni, Cr, Co, Mn, Pd, or Zr.

It is furthermore stated in paragraph 0053 of the Specification of the patent in question that "an amount of from 0.1 to 1000 weight parts pit-edge controlling agent per 100 weight parts dye is suitable, and an amount of 5 to 200 weight parts is more preferable." Additionally, 0.4 g pit-edge controlling agent per 2 g dye (that is, 20 wt% pit-edge controlling agent relative to the dye) is used in examples in the Specification of the patent in question.

It is therefore highly probable that the constituent feature "comprising several wt% to 50 wt% organic dye quencher relative to the organic dye" in Exhibit A1 duplicates the constituent feature "including a pit-edge controlling agent comprising a thermal decomposition accelerator for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C" in Invention 7 of the patent in question.

As such, Invention 7 of the patent in question is the invention described in Exhibit A1 or at least an invention readily discovered by a person skilled in the art based thereon.

((2)) Comparison With Invention Described in Exhibit A2

The invention described in Exhibit A2 can be broken down as follows:

7A: it is a composition for a recording layer in an optical information recording medium;

7B: the recording layer composition comprises a pyrylium compound; and

7C': the recording layer composition comprises about 1 to 60 wt% metal chelate compound relative to the total amount of the recording material forming the recording layer, and the metal chelate compound is selected from biscyclopentadiene-based metal chelate compounds.

Invention 7 of the patent in question and the invention described in Exhibit A2 appear to be different in that the former has the constituent feature 7C (including a pit-edge controlling agent comprising a thermal decomposition accelerator, selected from metallocenes and derivatives thereof, for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C), whereas the latter has the constituent feature 7C' (comprising 1 to 60 wt% biscyclopentadiene-based metal chelate compound relative to the total amount of the recording material forming the recording layer).

However, the metallocenes and derivatives thereof in Invention 7 of the patent in question include biscyclopentadiene-based metal chelate compounds.

It is furthermore stated in paragraph 0053 of the Specification of the patent in question that "an amount of from 0.1 to 1000 weight parts pit-edge controlling agent per 100 weight parts dye is suitable, and an amount of 5 to 200 weight parts is more preferable." Additionally, 0.4 g pit-edge controlling agent per 2 g dye (that is, 20 wt% pit-edge controlling agent relative to the dye) is used in examples in the Specification of the patent in question.

It is therefore highly probable that the constituent feature "comprising about 1 to 60 wt% biscyclopentadiene-based metal chelate compound relative to the total amount of the recording material forming the recording layer" in Exhibit A2 duplicates the constituent feature "including a pit-edge controlling agent comprising a thermal decomposition accelerator for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C" in Invention 7 of the patent in question.

As such, Invention 7 of the patent in question is the invention described in Exhibit A2 or at least an invention readily discovered by a person skilled in the art based thereon.

((3)) Comparison With Invention Described in Exhibit A3

The invention described in Exhibit A3 can be broken down as follows:

7A: it is a composition for a recording layer in a semiconductor laser optical information recording medium;

7B: the recording layer composition comprises a metal phthalocyanine complex; and

7C': the recording layer composition comprises 0.099 g or 0.198 g ferrocene derivative per 1.0 g metal phthalocyanine complex.

Invention 7 of the patent in question and the invention described in Exhibit A3 appear to be different in that the former has the constituent feature 7C (including a pit-edge controlling agent comprising a thermal decomposition accelerator, selected from metallocenes and derivatives thereof, for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C), whereas the latter has the constituent feature 7C' (comprising 0.099 g or 0.198 g ferrocene derivative per 1.0 g dye).

However, it is stated in paragraph 0053 of the Specification of the patent in question that "an amount of from 0.1 to 1000 weight parts pit-edge controlling agent per 100 weight parts dye is suitable, and an amount of 5 to 200 weight parts is more preferable." Additionally, 0.4 g

pit-edge controlling agent per 2 g dye (that is, 20 wt% pit-edge controlling agent relative to the dye) is used in examples in the Specification of the patent in question.

It is therefore highly probable that the constituent feature "comprising 0.099 g or 0.198 g ferrocene derivative per 1.0 g dye" in Exhibit A3 duplicates the constituent feature "including a pit-edge controlling agent comprising a thermal decomposition accelerator for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C" in Invention 7 of the patent in question.

As such, Invention 7 of the patent in question is the invention described in Exhibit A3 or at least an invention readily discovered by a person skilled in the art based thereon.

((4)) Comparison With Invention Described in Exhibit A4

The invention described in Exhibit A4 can be broken down as follows:

7A: it is a composition for a recording layer in an optical information recording medium;

7B: the recording layer composition comprises an organic dyes such as an indolenine-based cyanine dye, phthalocyanine dye, or naphthalocyanine dye; and

7C′: the recording layer composition comprises 2 mM ferrocenyl PEG per 7 mM organic dye.

Invention 7 of the patent in question and the invention described in Exhibit A4 appear to be different in that the former has the constituent feature 7C (including a pit-edge controlling agent comprising a thermal decomposition accelerator, selected from metallocenes and derivatives thereof, for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C), whereas the latter has the constituent feature 7C′ (comprising 2 mM ferrocenyl PEG per 7 mM organic dye).

However, it is stated in paragraph 0053 of the Specification of the patent in question that "an amount of from 0.1 to 1000 weight parts pit-edge controlling agent per 100 weight parts dye is suitable, and an amount of 5 to 200 weight parts is more preferable." Additionally, 0.4 g pit-edge controlling agent per 2 g dye (that is, 20 wt% pit-edge controlling agent relative to the dye) is used in examples in the Specification of the patent in question.

It is therefore highly probable that the constituent feature "comprising 2 mM ferrocenyl PEG per 7 mM organic dye" in Exhibit A4 duplicates the constituent feature "including a pit-edge controlling agent comprising a thermal decomposition accelerator for lowering the temperature at

which thermal decomposition of the organic dye begins by at least 10°C" in Invention 7 of the patent in question.

As such, Invention 7 of the patent in question is the invention described in Exhibit A4 or at least an invention readily discovered by a person skilled in the art based thereon.

(2) Claim 8

Invention 8 of the patent in question is

8C: a composition according to Claim 7, wherein the thermal decomposition accelerator lowers the temperature at which thermal decomposition of the organic dye begins by at least 25°C.

For the same reasons given regarding Invention 7 in sections 7-3-2-2. (1) ((1)) through ((4)), Invention 8 of the patent in question is an invention described in any of Exhibits A1 through A4 or at least an invention readily discovered by a person skilled in the art based thereon.

(3) Claim 9

Invention 9 of the patent in question is

9C: a composition according to Claim 7 or 8, wherein the metallocenes and derivatives thereof comprise ferrocenes and derivatives thereof.

For the same reasons given regarding Invention 7 in sections 7-3-2-2. (1) ((3)) and ((4)), Invention 9 of the patent in question is an invention described in Exhibit A3 or A4, or at least an invention readily discovered by a person skilled in the art based thereon.

Furthermore, biscyclopentadiene ligands or biscyclopentadiene metal chelate compounds are typically ferrocenes or derivatives thereof, and Invention 9 of the patent in question has not been shown to demonstrate uniquely distinctive effects through the selection of ferrocenes and derivatives thereof as the metallocenes and derivatives thereof. Invention 9 of the patent in question could therefore have been readily found by a person skilled in the art based on the inventions described in Exhibits A1 or A2.

(4) Claim 11

Invention 11 of the patent in question is

11B: a composition according to any of Claims 7 through 10, wherein the recording dye comprises a phthalocyanine compound.

For the same reasons given regarding Invention 7 in sections 7-3-2-2. (1) ((3)) and ((4)), Invention 11 of the patent in question is an invention described in Exhibit A3

or A4, or at least an invention readily discovered by a person skilled in the art based thereon.

(5) Claim 12

Invention 12 of the patent in question is

12B: the composition of Claim 11, wherein the phthalocyanine compound comprises a halogenated phthalocyanine .

In Example 2 of Exhibit A3, a chlorinated aluminum phthalocyanine is described as a metal phthalocyanine complex.

Invention 12 of the patent in question is therefore the invention described in Exhibit A3, or at least an invention readily found by a person skilled in the art based thereon.

(6) Claim 13

Invention 13 of the patent in question is

13A: a composition according to any of Claims 7 through 12, comprising a composition for a recording layer in an optical information recording medium, wherein a recording layer comprising an organic dye is formed into a film by means of a coating method using an organic dye film-forming solvent, the pit-edge controlling agent being soluble in said film-forming solvent.

In Exhibit A1, it is stated that a recording layer comprising a dye and a quencher is formed by means of a coating method such as spinner coating, that the quencher is selected in consideration of compatibility with the solvent, and that the optical recording layer is formed out of a solution comprising a dye and quencher.

In Exhibit A2, it is stated that a dye and metal chelate compound are applied by a spinner coating method using a solvent.

Invention 13 of the patent in question is therefore the invention described in Exhibit A1 or A2, or at least an invention readily found by a person skilled in the art based thereon.

(7) Claim 14

Invention 14 of the patent in question is

14A: a composition for a recording layer in an optical information recording medium, comprising a composition according to any of Claims 7 through 13 dissolved in a solvent

Exhibits A1 and A2 describe organic solvent solutions of organic dyes and quenchers (or metal chelate compounds), and Exhibits A3 and A4 describe micelle solutions of organic dyes and ferrocene derivatives.

Invention 14 of the patent in question is therefore the inventions described in any of Exhibits A1 through A4, or at least an invention readily found by a person skilled in the art based thereon.

(8) Claim 15

Invention 15 of the patent in question is

15A: a method for producing an optical information recording medium, comprising the steps of dissolving a composition according to any of Claims 7 through 13 in a solvent to form a coating solution, coating a transparent substrate with the resulting solution, and forming a recording layer comprising an organic dye and a pit-edge controlling agent.

Exhibits A1 and A2 describe methods for producing an optical information recording medium, comprising the steps of coating a transparent substrate with an organic solvent solution of an organic dye and quencher (or metal chelate compound), and forming a recording layer comprising an organic dye and a quencher (or metal chelate compound).

Invention 15 of the patent in question is therefore an invention described in Exhibit A1 or A2, or at least an invention readily found by a person skilled in the art based thereon.

(9) Claim 16

Invention 16 of the patent in question is

16A: a method for producing an optical information recording medium, comprising the steps of coating a transparent substrate with a composition according to Claim 14, and forming a recording layer comprising an organic dye and a pit-edge controlling agent.

For the same reasons given regarding Invention 15 in section 7-3-2-2. (8), Invention 16 of the patent in question is an invention described in Exhibit A1 or A2, or at least an invention readily found by a person skilled in the art based thereon.

(10) Claim 1

Invention 1 of the patent in question can be broken down as follows:

1A: it is an optical information recording medium comprising a recording layer, reflecting layer, and protecting layer provided, in that order, on a transparent substrate;

1B: the recording layer comprises an organic dye allowing information to be written by laser light; and

1C: the recording layer includes a pit-edge controlling agent comprising a thermal decomposition accelerator for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C, the thermal decomposition accelerator being selected from metallocenes and derivatives thereof.

In paragraphs 0004, 0005, and 0009 of the Specification of the invention in question, it is stated that, as prior art, "CD-R media comprise the formation of a recording layer, reflecting layer, and protecting layer formed, in that order, on a transparent resin substrate, and that "the recording layer in optical information recording media contain a variety of additives, and several examples of improved properties have been disclosed." The Patentee thus acknowledges in the Specification that the invention related to the prior art were was known.

The commonly known invention described in the Specification of the patent in question can accordingly be broken down as follows:

1A: it is an optical information recording medium comprising a recording layer, reflecting layer, and protecting layer provided, in that order, on a transparent substrate;

1B: the recording layer comprises an organic dye allowing information to be written by means of laser light; and

1C': the recording layer comprises certain types of additives.

Invention 1 of the patent in question and the above well known invention differ in that the former has constituent feature 1C (the recording layer includes a pit-edge controlling agent comprising a thermal decomposition accelerator for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C, the thermal decomposition accelerator being selected from metallocenes and derivatives thereof), whereas the later has constituent feature 1C' (the recording layer comprises certain types of additives).

((1)) Passages in Exhibit A1

It is stated in Exhibit A1 that the recording layer of an optical information recording carrier comprising an organic dye such as anthraquinone derivatives, cyanine compounds, pyrylium compounds, xanthene compounds, triphenylmethane compounds, and azo dyes contains the organic dye in a proportion of several wt% to 50 wt% relative to the organic dye, and that the quencher is

selected from biscyclopentadienyl ligands, the central metal of which is Zn, Cu, Ni, Cr, Co, Mn, Pd, or Zr.

Here, the metallocenes and derivatives in Invention 1 of the patent in question include biscyclopentadienyl ligands, the central metal of which is Zn, Cu, Ni, Cr, Co, Mn, Pd, or Zr.

In paragraph 0053 of the Specification of the invention in question, it is also stated that "an amount of from 0.1 to 1000 weight parts pit-edge controlling agent per 100 weight parts dye is suitable, and an amount of 5 to 200 weight parts is more preferable." 0.4 g pit-edge controlling agent per 2 g dye (that is, 20 wt% pit-edge controlling agent relative to the dye) is used in examples in the Specification of the patent in question.

It is therefore highly probable that the constituent feature "comprising an organic dye quencher in a proportion of several wt% to 50 wt% relative to the organic dye" in Exhibit A1 duplicates the constituent feature "including a pit-edge controlling agent comprising a thermal decomposition accelerator for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C" in Invention 1 of the patent in question. In short, it may be concluded that Exhibit A1 describes constituent feature 1C of Invention 1 of the patent in

question (the recording layer includes a pit-edge controlling agent comprising a thermal decomposition accelerator for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C, the thermal decomposition accelerator being selected from metallocenes and derivatives thereof).

Constituent features 1A through 1C of Invention 1 of the patent in question could therefore have been readily conceived by combining the above well known invention and passages from Exhibit A1.

The effect of Invention 1 of the patent in question cannot be considered particularly unique in comparison to the effects of the above commonly known invention resulting in favorable recording properties or the effects of the invention described in Exhibit A1 which involve favorable recording contrast and/or favorable recording sensitivity (page 2, 2nd line from bottom of lower left column to line 4 of lower right column).

Invention 1 of the patent in question could therefore have been readily found by a person skilled in the art based on the above commonly known invention and the invention described in Exhibit A1.

((2)) Passages in Exhibit A2

In Exhibit A2, it is stated that a recording layer for an optical information recording medium comprising a pyrylium compound comprises about 1 to 60 wt% metal chelate compound relative to the total weight of the recording material forming the recording layer, and that the metal chelate compound is selected from biscyclopentadiene-based metal chelate compounds.

The metallocenes and derivatives thereof in Invention 1 of the patent in question include the bicyclopentadiene-based metal chelate compounds in Exhibit A2.

In paragraph 0053 of the Specification of the invention in question, it is also stated that "an amount of from 0.1 to 1000 weight parts pit-edge controlling agent per 100 weight parts dye is suitable, and an amount of 5 to 200 weight parts is more preferable." 0.4 g pit-edge controlling agent per 2 g dye (that is, 20 wt% pit-edge controlling agent relative to the dye) is used in examples in the Specification of the patent in question.

It is therefore highly probable that the constituent feature "comprising about 1 to 60 wt% metal chelate compound relative to the total weight of the recording material forming the recording layer" in Exhibit A2 duplicates the constituent feature "including a pit-edge controlling agent comprising a thermal decomposition accelerator for lowering

the temperature at which thermal decomposition of the organic dye begins by at least 10°C" in Invention 1 of the patent in question. In short, it may be concluded that Exhibit A2 describes constituent feature 1C of Invention 1 of the patent in question (the recording layer includes a pit-edge controlling agent comprising a thermal decomposition accelerator for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C, the thermal decomposition accelerator being selected from metallocenes and derivatives thereof).

Constituent features 1A through 1C of Invention 1 of the patent in question could therefore have been readily conceived by combining the above well known invention and passages from Exhibit A2.

The effect of Invention 1 of the patent in question cannot be considered particularly unique in comparison to the effects of the above commonly known invention resulting in favorable recording properties.

Invention 1 of the patent in question could therefore have been readily found by a person skilled in the art based on the above commonly known invention and the invention described in Exhibit A2.

(11) Claim 2

Invention 2 of the patent in question is

2C: an optical information recording medium according to Claim 1, wherein the thermal decomposition accelerator lowers the temperature at which thermal decomposition of the organic dye begins by at least 25°C.

For the same reasons given regarding Invention 1 in sections 7-3-2-2. (10) ((1)) and ((2)), Invention 2 of the patent in question could have been readily found by a person skilled in the art based on the above commonly known invention and the inventions described in Exhibit A1 or A2.

(12) Claim 3

Invention 3 of the patent in question is

3C: an optical information recording medium according to Claim 1 or 2, wherein the metallocenes and derivatives thereof are ferrocenes and derivatives thereof

The metallocenes or derivatives thereof in Invention 3 are typically the biscyclopentadienyl ligands in Exhibit A1 or the biscyclopentadiene-based metal chelate compounds in Exhibit A2.

Invention 3 furthermore does not demonstrate uniquely distinctive effects through the selection of ferrocenes and derivatives thereof as the metallocenes and derivatives thereof.

Invention 3 of the patent in question could therefore have been readily found by a person skilled in the art based on the above commonly known invention and the inventions described in Exhibit A1 or A2.

(13) Claim 4

Invention 4 of the patent in question is

4C: an optical information recording medium according to Claim 3, wherein the ferrocenes and ferrocene derivatives are any of ferrocene, benzoyl ferrocene, 1,1'-dimethylferrocene, n-butylferrocene, cyclohexenylferrocene, and vinylferrocene.

For the same reasons given regarding Invention 3 in section 7-3-2-2. (12), Invention 4 of the patent in question could have been readily found by a person skilled in the art based on the above commonly known invention and the inventions described in Exhibit A1 or A2.

(14) Claim 5

Invention 5 of the patent in question is

5B: an optical information recording medium according to any of Claims 1 through 4, wherein the recording dye is a phthalocyanine compound.

Phthalocyanine compounds are given along with cyanine dyes as examples of organic dyes in the Prior Art section of the Specification of the patent in question.

Invention 5 furthermore does not demonstrate uniquely distinctive effects through the selection of phthalocyanine compounds as organic dyes.

Invention 5 of the patent in question could therefore have been readily found by a person skilled in the art based on the above commonly known invention and the inventions described in Exhibit A1 or A2.

(15) Claim 6

Invention 6 of the patent in question is

6B: an optical information recording medium according to Claim 5, wherein the phthalocyanine compound is a halogenated phthalocyanine compound.

Halogenated phthalocyanine s were so well known as phthalocyanine dyes that halogenated phthalocyanine s are noted as phthalocyanine compounds in Exhibit A6 below.

Invention 6 furthermore does not demonstrate uniquely distinctive effects through the selection of halogenated phthalocyanine compounds as organic dyes.

Invention 6 of the patent in question could therefore have been readily found by a person skilled in the art based

on the above commonly known invention and the inventions described in Exhibit A1 or A2.

(16) Claim 10

Invention 10 of the patent in question is

10C: a composition according to Claim 9, wherein the ferrocenes and ferrocene derivatives are any of ferrocene, benzoyl ferrocene, 1,1'-dimethylferrocene, n-butylferrocene, cyclohexenylferrocene, and vinylferrocene.

For the same reasons given regarding Invention 3 in section 7-3-2-2. (12), Invention 10 of the patent in question could have been readily found by a person skilled in the art based on the above commonly known invention and the inventions described in Exhibit A1 or A2.

7-3-3. Lack of Inventive Step

7-3-3-1. Description of Evidence

(1) Exhibit A5 (Japanese Unexamined Patent Application (Kokai) H3-224792)

Exhibit A5 relates to an optical recording medium comprising a substrate onto which are laminated a recording layer comprising a dye, and a reflecting layer and protecting on said recording layer, wherein pits are formed when the recording layer is irradiated with recording light,

and playback is brought about by means of playback light (Claim 1 and Figure 1).

The recording layer described in Exhibit A5 is formed from a light-absorbing dye such as cyanine s or phthalocyanine s, and a quencher may be mixed with the light-absorbing dye (page 5, 6th line from bottom in lower right column to line 10 in upper left column on page 10).

In Exhibit A5, various metal complexes such as acetyl acetonate are preferred as the quencher, and are preferably added in an amount of up to 1 mol per mol total light-absorbing dye (page 6, lines 11 to 16 in upper left column, and page 6, lines 12 to 16 in lower left column).

It is stated in Example 4 of Exhibit A5 that an organic solvent solution of 90 wt% light-absorbing dye and 10 wt% quencher is spin coated to form a recording layer allowing information to be recorded by means of laser light (Sample No. 31).

The invention described in Exhibit A5 has the effect of providing an optical recording medium which results in a good pit configuration as well as a high S/N ratio, with good recording and playback (page 23, lines 6 to 8 in lower left column).

(2) Exhibit A6 (Japanese Unexamined Patent Application (Kokai) H4-336282)

Exhibit A6 describes a write-once-read-many optical recording medium comprising a recording layer, reflecting layer, and protecting layer provided, in that order, on a substrate, wherein the recording layer comprises an organic dye such as phthalocyanine dyes and cyanine dyes (Claim 1, and paragraph 0008).

An additive such as a singlet oxygen quencher can be added to the organic dye, such as phthalocyanine dyes and cyanine dyes, in the recording layer described in Exhibit A6 (paragraph 0008).

It is stated in Example 1 in Exhibit A6 that a halogenated phthalocyanine dye is dissolved in ethylcyclohexane to form a coating solution, and that the solution is spin coated onto a substrate to form a recording layer on which information can be recorded by means of laser light.

The invention described in Exhibit A6 offers a merit of providing a write-once-read-many CD having favorable recording properties (paragraph 0019).

(3) Exhibit A1

Various metal chelate compounds such as biscyclopentadienyl ligands are given as quenchers for various dyes such as cyanine compounds (page 4, 6th line from bottom of upper left column to line 1 of lower left column).

(4) Exhibit A7 (Bull. Chem. Soc. Jpn., 55, 2753-2759 (1982))

It is stated in Exhibit A7 that "3ZnPc is quenched by oxidizers such as ferrocenium ion . . ." (page 2754, 4th to 2nd lines from bottom of right column).

7-3-3-2. Comparison of Invention of Patent in Question and Inventions Described in Evidence

(1) Claim 1

Invention 1 of the patent in question can be broken down as follows:

1A: it is an optical information recording medium comprising a recording layer, reflecting layer, and protecting layer provided, in that order, on a transparent substrate;

1B: the recording layer comprises an organic dye allowing information to be written by laser light; and

1C: the recording layer includes a pit-edge controlling agent comprising a thermal decomposition accelerator for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C, the thermal decomposition accelerator being selected from metallocenes and derivatives thereof.

((1)) Comparison With Invention Described in Exhibit A5

The invention described in Exhibit A5 can be broken down as follows:

1A: it is an optical recording medium comprising a recording layer, reflecting layer, and protecting layer provided, in that order, on a transparent substrate;

1B: the recording layer comprises a light-absorbing dye allowing information to be written by laser light; and

1C': the recording layer includes up to 1 mol quencher per mol total light-absorbing dye.

Invention 1 of the patent in question and the invention described in Exhibit A5 differ in that the former has constituent feature 1C (includes a pit-edge controlling agent comprising a thermal decomposition accelerator, selected from metallocenes and derivatives thereof, for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C), whereas the latter

has constituent feature C' (includes up to 1 mol quencher per mol total light-absorbing dye).

However, as stated in Exhibit A1 or A7, it is common knowledge that biscyclopentadienyl ligands (that is, metallocenes) or ferrocenium ion may be included as organic dye quenchers. Constituent feature 1C' of the invention described in Exhibit A5 can therefore be replaced by including up to 1 mol quencher per mol total light-absorbing dye.

It is furthermore stated in paragraph 0053 of the Specification of the patent in question that "an amount of from 0.1 to 1000 weight parts pit-edge controlling agent per 100 weight parts dye is suitable, and an amount of 5 to 200 weight parts is more preferable." Additionally, 0.4 g pit-edge controlling agent per 2 g dye (that is, 20 wt% pit-edge controlling agent relative to the dye) is used in examples in the Specification of the patent in question.

It is therefore highly probable that the constituent feature "including up to 1 mol quencher per mol total light-absorbing dye" in Exhibit A5 duplicates the constituent feature "including a pit-edge controlling agent comprising a thermal decomposition accelerator for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C, the thermal decomposition

accelerator being selected from metallocenes and derivatives thereof" in Invention 1 of the patent in question.

Furthermore, the effect of Invention 1 of the patent in question cannot be considered particularly unique in comparison to the effects of the invention described in Exhibit A5 which results in a good pit configuration as well as a high S/N ratio, with good recording and playback.

Invention 1 of the patent in question could therefore have been readily found by a person skilled in the art based on the invention described in Exhibit A5.

((2))Comparison With Invention Described in Exhibit A6

The invention described in Exhibit A6 can be broken down as follows:

1A: it is an optical recording medium comprising a recording layer, reflecting layer, and protecting layer provided, in that order, on a transparent substrate;

1B: the recording layer comprises an organic dye allowing information to be written by laser light; and

1C': the recording layer comprises a singlet oxygen quencher.

Invention 1 of the patent in question and the invention described in Exhibit A6 differ in that the former has constituent feature 1C (includes a pit-edge controlling

agent comprising a thermal decomposition accelerator, selected from metallocenes and derivatives thereof, for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C), whereas the latter has constituent feature C' (comprises a singlet oxygen quencher).

As stated in Exhibit A1 or A7, it is common knowledge that biscyclopentadienyl ligands (metallocenes) or ferrocenium ion may be included as organic dye quenchers. Constituent feature 1C' of the invention described in Exhibit A6 can therefore be replaced by including metallocenes.

It is also stated in Exhibit A5 that up to 1 mol quencher is added per mol total organic dye, such as phthalocyanine dyes or cyanine dyes, to the recording layer of the optical recording medium having the same constituent feature as the optical recording medium described in Exhibit A6.

The constituent feature "including up to 1 mol quencher per mol total organic dye" could therefore have been readily conceived by a person skilled in the art based on passages from Exhibit A6 and A5.

It is stated in paragraph 0053 of the Specification of the patent in question that "an amount of from 0.1 to 1000

weight parts pit-edge controlling agent per 100 weight parts dye is suitable, and an amount of 5 to 200 weight parts is more preferable." Additionally, 0.4 g pit-edge controlling agent per 2 g dye (that is, 20 wt% pit-edge controlling agent relative to the dye) is used in examples in the Specification of the patent in question.

It is therefore highly probable that the constituent feature "including up to 1 mol metallocene per mol total organic dye" derived from passages in Exhibit A6 and Exhibit A5 duplicates the constituent feature "including a pit-edge controlling agent comprising a thermal decomposition accelerator for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C, the thermal decomposition accelerator being selected from metallocenes and derivatives thereof" in Invention 1 of the patent in question.

Furthermore, the effect of Invention 1 of the patent in question cannot be considered particularly unique in comparison to the effects of the invention described in Exhibit A6 which makes it possible to provide a write-once-read-many CD with favorable recording properties, or the invention described in Exhibit A5 which results in a good pit configuration as well as a high S/N ratio, with good recording and playback.

Invention 1 of the patent in question could therefore have been readily found by a person skilled in the art based on the inventions described in Exhibit A6 and Exhibit A5.

(2) Claim 2

Invention 2 of the patent in question is

2C: an optical information recording medium according to Claim 1, wherein the thermal decomposition accelerator lowers the temperature at which thermal decomposition of the organic dye begins by at least 25°C.

For the same reasons given regarding Invention 1 in sections 7-3-3-2. (1) ((1)) and ((2)), Invention 2 of the patent in question could have been readily found by a person skilled in the art based on the invention described in Exhibit A5 or the inventions described in Exhibits A6 and A5.

(3) Claim 3

Invention 3 of the patent in question is

3C: an optical information recording medium according to Claim 1 or 2, wherein the metallocenes and derivatives thereof are ferrocenes and derivatives thereof

As stated in Exhibit A1 or A7, it is common knowledge that biscyclopentadienyl ligands (metallocenes) or

ferrocenium ion may be included as organic dye quenchers. In addition, the metallocene is typically a ferrocene. Invention 3 of the patent in question could therefore have been readily found by a person skilled in the art based on the inventions described in Exhibit A6 and A5.

(4)Claim 4

Invention 4 of the patent in question is

4C: an optical information recording medium according to Claim 3, wherein the ferrocenes and ferrocene derivatives are any of ferrocene, benzoyl ferrocene, 1,1'-dimethylferrocene, n-butylferrocene, cyclohexenylferrocene, and vinylferrocene.

For the same reasons given regarding Invention 3 in section 7-3-3-2. (3), Invention 4 of the patent in question could have been readily found by a person skilled in the art based on the invention described in Exhibit A5 or the inventions described in Exhibits A6 and A5.

(5) Claim 5

Invention 5 of the patent in question is

5B: an optical information recording medium according to any of Claims 1 through 4, wherein the recording dye is a phthalocyanine compound.

Phthalocyanine compounds are described as organic dyes in Exhibit A5 and Exhibit A6.

Invention 5 furthermore does not demonstrate uniquely distinctive effects through the selection of phthalocyanine compounds as organic dyes.

Invention 5 of the patent in question could therefore have been readily found by a person skilled in the art based on the invention described in Exhibit A5 or the inventions described in Exhibits A6 and A5.

(6) Claim 6

Invention 6 of the patent in question is

6B: an optical information recording medium according to Claim 5, wherein the phthalocyanine compound is a halogenated phthalocyanine compound.

Halogenated phthalocyanine s were so well known as phthalocyanine dyes that halogenated phthalocyanine s are noted as phthalocyanine compounds in Exhibit A6.

Invention 6 furthermore does not demonstrate uniquely distinctive effects through the selection of halogenated phthalocyanine compounds as organic dyes.

Invention 6 of the patent in question could therefore have been readily found by a person skilled in the art based

on the invention described in Exhibit A5 or the inventions described in Exhibits A6 and A5.

(7) Claim 7

Invention 7 of the patent in question can be broken down as follows:

7A: it is a composition for a recording layer in an optical information recording medium;

7B: the recording layer composition includes an organic dye allowing information to be written by means of laser light; and

7C: the recording layer composition includes a pit-edge controlling agent comprising a thermal decomposition accelerator for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C, and the thermal decomposition accelerator is selected from metallocenes and derivatives thereof.

((1)) Comparison With Invention Described in Exhibit A5

The invention described in Exhibit A5 can be broken down as follows:

7A: it is a composition for a recording layer in an optical information recording carrier;

7B: the recording layer composition includes a light-absorbing dye allowing information to be written by means of laser light; and

7C': the recording layer composition comprises up to 1 mol per mol total light-absorbing dye.

Invention 7 of the patent in question and the invention described in Exhibit A5 differ in that the former has constituent feature 7C (includes a pit-edge controlling agent comprising a thermal decomposition accelerator, selected from metallocenes and derivatives thereof, for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C), whereas the latter has constituent feature 1C' (includes up to 1 mol quencher per mol total light-absorbing dye).

However, as stated in Exhibit A1 or A7, it is common knowledge that biscyclopentadienyl ligands (metallocenes) or ferrocenium ion may be included as organic dye quenchers. Constituent feature 7C' of the invention described in Exhibit A5 can therefore be replaced by including up to 1 mol metallocene per mol total light-absorbing dye.

It is furthermore stated in paragraph 0053 of the Specification of the patent in question that "an amount of from 0.1 to 1000 weight parts pit-edge controlling agent per 100 weight parts dye is suitable, and an amount of 5 to

200 weight parts is more preferable." Additionally, 0.4 g pit-edge controlling agent per 2 g dye (that is, 20 wt% pit-edge controlling agent relative to the dye) is used in examples in the Specification of the patent in question.

It is therefore highly probable that the constituent feature "including up to 1 mol metallocene per mol total light-absorbing dye" in Exhibit A5 duplicates the constituent feature "including a pit-edge controlling agent comprising a thermal decomposition accelerator for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C, the thermal decomposition accelerator being selected from metallocenes and derivatives thereof" in Invention 7 of the patent in question.

Furthermore, the effect of Invention 7 of the patent in question cannot be considered particularly unique in comparison to the effects of the invention described in Exhibit A5 which results in a good pit configuration as well as a high S/N ratio, with good recording and playback.

Invention 7 of the patent in question could therefore have been readily found by a person skilled in the art based on the invention described in Exhibit A5.

((2)) Comparison With Invention Described in Exhibit A6

Invention 6 of the patent in question can be broken down as follows:

7A: it is a composition for a recording layer in an optical recording carrier;

7B: the recording layer composition includes an organic dye allowing information to be written by means of laser light; and

7C': the recording layer composition comprises a singlet oxygen quencher.

Invention 7 of the patent in question and the patent described in Exhibit A6 differ in that the former has constituent feature 7C (includes a pit-edge controlling agent comprising a thermal decomposition accelerator, selected from metallocenes and derivatives thereof, for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C), whereas the latter has constituent feature 7C' (comprises a singlet oxygen quencher).

As stated in Exhibit A1 and A7, it is common knowledge that biscyclopentadienyl ligands (metallocenes) or ferrocenium ion may be included as organic dye quenchers. Constituent feature 1C' of the invention described in Exhibit A6 can therefore be replaced by including metallocenes.

It is stated in Exhibit A5 that up to 1 mol quencher is added per mol total organic dye, such as phthalocyanine dyes or cyanine dyes, to the recording layer of the optical recording medium having the same constituent feature as the optical recording medium described in Exhibit A6.

The constituent feature "including up to 1 mol metallocene per mol total organic dye" could therefore have been readily conceived by one having ordinary skill in the art based on passages from Exhibit A6 and A5.

It is stated in paragraph 0053 of the Specification of the patent in question that "an amount of from 0.1 to 1000 weight parts pit-edge controlling agent per 100 weight parts dye is suitable, and an amount of 5 to 200 weight parts is more preferable." Additionally, 0.4 g pit-edge controlling agent per 2 g dye (that is, 20 wt% pit-edge controlling agent relative to the dye) is used in examples in the Specification of the patent in question.

It is therefore highly probable that the constituent feature "including up to 1 mol metallocene per mol total organic dye" derived from passages in Exhibit A6 and Exhibit A5 duplicates the constituent feature "including a pit-edge controlling agent comprising a thermal decomposition accelerator for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C,

the thermal decomposition accelerator being selected from metallocenes and derivatives thereof" in Invention 7 of the patent in question.

Furthermore, the effect of Invention 7 of the patent in question cannot be considered particularly unique in comparison to the effects of the invention described in Exhibit A6 which makes it possible to provide a write-once-read-many CD with favorable recording properties, or the invention described in Exhibit A5 which results in a good pit configuration as well as a high S/N ratio, with good recording and playback.

Invention 7 of the patent in question could therefore have been readily found by a person skilled in the art based on the inventions described in Exhibit A6 and Exhibit A5.

(8) Claim 8

Invention 8 of the patent in question is

8C: a composition according to Claim 7, wherein the thermal decomposition accelerator lowers the temperature at which thermal decomposition of the organic dye begins by at least 25°C.

For the same reasons given regarding Invention 7 in sections 7-3-3-2. (7) ((1)) and ((2)), Invention 8 of the patent in question could have been readily discovered by a

person skilled in the art based on the invention described in Exhibit A5 or inventions described in Exhibit A6 and A5.

(9) Claim 9

Invention 9 of the patent in question is

9C: a composition according to Claim 7 or 8, wherein the metallocenes and derivatives thereof comprise ferrocenes and derivatives thereof.

As stated in Exhibit A1 or A7, it is common knowledge that biscyclopentadienyl ligands (metallocenes) or ferrocenium ion may be included as organic dye quenchers. The metallocene is also typically a ferrocene. Invention 9 of the patent in question could therefore have been readily found by a person skilled in the art based on the invention described in Exhibit A5 or inventions described in Exhibit A6 and A5.

(10) Claim 10

Invention 10 of the patent in question is

10C: a composition according to Claim 9, wherein the ferrocenes and ferrocene derivatives are any of ferrocene, benzoyl ferrocene, 1,1'-dimethylferrocene, n-butylferrocene, cyclohexenylferrocene, and vinylferrocene.

For the same reasons given regarding Invention 9 in section 7-3-3-2. (9), Invention 10 of the patent in question could have been readily found by a person skilled in the art based on the invention described in Exhibit A5 or inventions described in Exhibit A6 and A5.

(11) Claim 11

Invention 11 of the patent in question is

11B: a composition according to any of Claims 7 through 10, wherein the recording dye comprises a phthalocyanine compound.

Phthalocyanine compounds are described as organic dyes in Exhibit A5 and A6.

Invention 11 furthermore does not demonstrate uniquely distinctive effects through the selection of phthalocyanine compounds as organic dyes.

Invention 10 of the patent in question could therefore have been readily found by a person skilled in the art based on the invention described in Exhibit A5 or inventions described in Exhibit A6 and A5.

(12) Claim 12

Invention 12 of the patent in question is

12B: the composition of Claim 11, wherein the phthalocyanine compound comprises a halogenated phthalocyanine .

Halogenated phthalocyanine s were so well known as phthalocyanine dyes that halogenated phthalocyanine s are noted as phthalocyanine compounds in Exhibit A6.

Invention 12 furthermore does not demonstrate uniquely distinctive effects through the selection of halogenated phthalocyanine compounds as organic dyes.

Invention 12 of the patent in question could therefore have been readily found by a person skilled in the art based on the invention described in Exhibit A5 or inventions described in Exhibit A6 and A5.

(13) Claim 13

Invention 13 of the patent in question can be broken down as follows:

13A: it is a composition according to any of Claims 7 through 12, comprising a composition for a recording layer in an optical information recording medium;

13B: a recording layer comprising an organic dye is formed into a film by means of a coating method using an organic dye film-forming solvent; and

13C: the pit-edge controlling agent is soluble in the film-forming solvent.

((1)) Comparison With Invention Described in Exhibit A5

The invention described in Exhibit A5 can be broken down as follows:

13A: it is a composition according to any of Claims 7 through 12, comprising a composition for a recording layer in an optical information recording medium;

13B: a recording layer comprising a light-absorbing dye is formed into a film by means of a coating method using an organic dye film-forming solvent; and

13C': the quencher is soluble in the film-forming solvent.

Exhibit A5 describes the mixture of a light-absorbing dye with a quencher and their subsequent dissolution in an organic solvent, and also describes various solvents such as ketones and ethers capable of dissolving metallocenes as the spin coating solvent.

Invention 13 of the patent in question could therefore have been readily found by a person skilled in the art based on the invention described in Exhibit A5.

((2)) Comparison With Invention Described in Exhibit A6

The invention described in Exhibit A6 can be broken down as follows:

13A: it is a composition according to any of Claims 7 through 12, comprising a composition for a recording layer in an optical information recording medium;

13B: a recording layer comprising an organic dye is formed into a film by means of a coating method using an organic dye film-forming solvent; and

13C': a singlet oxygen quencher is added to the organic dye.

Exhibit A6 describes the addition of a quencher to an organic dye, and a spin coating process involving the dissolution of the dye in ethylcyclohexane capable of dissolving metallocenes.

Invention 13 of the patent in question could therefore have been readily found by a person skilled in the art based on the inventions described in Exhibit A6 and A5.

(14) Claim 14

Invention 14 of the patent in question is

14A: a composition for a recording layer in an optical information recording medium, comprising a composition according to any of Claims 7 through 13 dissolved in a solvent.

For the same reasons given regarding Invention 13 in sections 7-3-3-2. (13) ((1)) and ((2)), Invention 14 of the patent in question could have been readily found by a person skilled in the art based on the invention described in Exhibit A5 or inventions described in Exhibit A6 and A5.

(15) Claim 15

Invention 15 of the patent in question is

15A: a method for producing an optical information recording medium, comprising the steps of dissolving a composition according to any of Claims 7 through 13 in a solvent to form a coating solution, coating a transparent substrate with the resulting solution, and forming a recording layer comprising an organic dye and a pit-edge controlling agent.

((1)) Passages in Exhibit A5

Exhibit A5 describes a method for producing an optical information recording medium, comprising the steps of dissolving a light-absorbing dye and a quencher in an organic solvent to form a coating solution, and spin coating the resulting solution on a transparent substrate to form a recording layer comprising a light-absorbing dye and a quencher (Example 4).

Invention 15 of the patent in question could therefore have been readily found based on the invention described in Exhibit A5.

((2)) Passages in Exhibit A6

Exhibit A6 describes a method for producing an optical information recording medium comprising the steps of dissolving a phthalocyanine dye in an organic solvent such as ethylcyclohexane to form a coating solution, and spin coating the resulting solution onto a transparent substrate to form a recording layer comprising an organic dye (Example 4). It is also stated that a singlet quencher is added to the organic dye.

Invention 15 of the patent in question could therefore have been readily found by a person skilled in the art based on the inventions described in Exhibit A6 and A5.

(16) Claim 16

Invention 16 of the patent in question is

16A: a method for producing an optical information recording medium, comprising the steps of coating a transparent substrate with a composition according to Claim 14, and forming a recording layer comprising an organic dye and a pit-edge controlling agent.

For the same reasons given regarding Invention 15 in section 7-3-3-2. (15), Invention 16 of the patent in question have been readily found based on the invention described in Exhibit A5 or the inventions described in Exhibit A6 and A5.

7-3-4. Lack of Novelty Due to Lack of Entitlement to Priority Right

7-3-4-1. Reasons for Lack of Entitlement to Priority Right

According to the Specification of the patent in questions, the "pit-edge controlling agent" described in Claims 1, 7, 13, 15, and 16 of the patent in question is defined as "primarily an additive which affects and changes the recording threshold level of the recording layer to achieve the stable formation of the shortest pit length, thereby permitting better pit-edge control" (paragraph 0027), and is also defined as "a certain kind of additive capable of lowering both Sp and S1" (paragraph 0029).

However, neither the Specification of Patent Application 04-323433 (Exhibit A8) which is the basic application 1 for the patent in question nor the Specification of Patent Application 05-102148 (Exhibit A9) which is the basic application 2 for the patent in question

either state or imply any such term "pit-edge controlling agent" or definition.

As such, Claims 1, 7, 13, 15, and 16 of the patent in question having the term "pit-edge controlling agent", and the inventions citing those claims, cannot be entitled to priority right based on basic applications 1 and 2.

The applicability of the Patent Law, Article 29-2 to the patent in question should therefore be determined on the basis of November 29, 1993, which is the actual date on which the application was filed.

7-3-4-2. Description of Evidence

Exhibit A10 (Japanese Unexamined Patent Application (Kokai) H6-243506), which has neither the same inventors nor applicant as the application of the invention in question, was filed before the actual date on which the application of the patent in question was filed, and was published after the application of the patent in question was filed. The invention described in Exhibit A10 is therefore covered under Article 29-2 with respect to the invention of the patent in question.

Exhibit A10 relates to a write-once-read-many optical recording medium (CD-R) which has a constituent feature comprising a recording layer, metallic reflecting layer,

protecting layer, and print laminated, in that order, on a transparent substrate, and which allows signals to be recorded and played back in compliance with CD regulations (paragraph 0008).

The optical recording medium described in Exhibit A10 records signals through the formation of pits in the recording layer upon irradiation by laser light (paragraph 0033).

The recording layer described in Exhibit A10 comprises an organic dye such as a phthalocyanine dye or cyanine dye (paragraph 0022 and Example 1), but also features the possible combined use of an organic metal complex such as a metallocene to improve the recording properties and the like (paragraph 0023). The content of the organic dye in the recording layer is at least 30%, and preferably at least 60% (paragraph 0022).

The recording layer described in Exhibit A10 can normally be formed by means such as spin coating or dip coating. When a film is formed by spin coating, the dye is dissolved in a solvent that will not damage the substrate, such as methylcyclohexane or dibutyl ether, before the spin coating process (paragraph 0024).

In Examples 1 and 2 in Exhibit A10, it is stated that a dibutyl ether solution of a chlorinated or brominated

phthalocyanine dye is spin coated onto a substrate to produce an optical recording medium.

7-3-4-3. Comparison of Invention of Patent in Question and Inventions Described in Evidence

(1) Claim 1

Invention 1 of the patent in question can be broken down as follows:

1A: it is an optical information recording medium comprising a recording layer, reflecting layer, and protecting layer provided, in that order, on a transparent substrate;

1B: the recording layer comprises an organic dye allowing information to be written by laser light; and

1C: the recording layer includes a pit-edge controlling agent comprising a thermal decomposition accelerator for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C, the thermal decomposition accelerator being selected from metallocenes and derivatives thereof.

The invention described in Exhibit A10 can be broken down as follows:

1A: it is a recording medium comprising a recording layer, reflecting layer, and protecting layer provided, in that order, on a transparent substrate;

1B: the recording layer comprises an organic dye allowing information to be written by laser light; and

1C': the recording layer comprises no more than 70% metallocene or the like.

Invention 1 of the patent in question and the invention described in Exhibit A10 appear to be different in that the former has constituent feature 1C (including a pit-edge controlling agent comprising a thermal decomposition accelerator, selected from metallocenes and derivatives thereof, for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C), whereas the latter has constituent feature 1C' (comprises no more than 70% metallocene or the like).

However, it is stated in paragraph 0053 of the Specification of the patent in question that "an amount of from 0.1 to 1000 weight parts pit-edge controlling agent per 100 weight parts dye is suitable, and an amount of 5 to 200 weight parts is more preferable." Additionally, 0.4 g pit-edge controlling agent per 2 g dye (that is, 20 wt% pit-edge controlling agent relative to the dye) is used in examples in the Specification of the patent in question.

It is therefore highly probable that the constituent feature "comprising no more than 70% metallocene or the like" in Exhibit A10 duplicates the constituent feature "including a pit-edge controlling agent comprising a thermal decomposition accelerator for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C" in Invention 1 of the patent in question.

As such, Invention 1 of the patent in question is the invention described in Exhibit A10.

(2) Claim 2

Invention 2 of the patent in question is

2C: an optical information recording medium according to Claim 1, wherein the thermal decomposition accelerator lowers the temperature at which thermal decomposition of the organic dye begins by at least 25°C.

For the same reasons given regarding Invention 1 in section 7-3-4.3. (1), Invention 2 of the patent in question is the invention described in Exhibit A10.

(3) Claim 3

Invention 3 of the patent in question is

3C: an optical information recording medium according to Claim 1 or 2, wherein the metallocenes and derivatives thereof are ferrocenes and derivatives thereof

It is common knowledge that the metallocenes described in Exhibit A10 are typically ferrocenes. Invention 3 of the patent in question is therefore the invention described in Exhibit A10.

(4) Claim 4

Invention 4 of the patent in question is

4C: an optical information recording medium according to Claim 3, wherein the ferrocenes and ferrocene derivatives are any of ferrocene, benzoyl ferrocene, 1,1'-dimethylferrocene, n-butylferrocene, cyclohexenylferrocene, and vinylferrocene.

For the same reasons given regarding Invention 3 in section 7-3-4-3. (3), Invention 4 of the patent in question is the invention described in Exhibit A10.

(5) Claim 5

Invention 5 of the patent in question is

5B: an optical information recording medium according to any of Claims 1 through 4, wherein the recording dye is a phthalocyanine compound.

Phthalocyanine compounds are described as recording dyes in Exhibit A10.

Invention 5 of the patent in question is therefore the invention described in Exhibit A10.

(6) Claim 6

Invention 6 of the patent in question is

6B: an optical information recording medium according to Claim 5, wherein the phthalocyanine compound is a halogenated phthalocyanine compound.

Exhibit A10 describes chlorinated or brominated phthalocyanine s as phthalocyanine compounds.

Invention 6 of the patent in question is therefore the invention described in Exhibit A10.

(7) Claim 7

Invention 7 of the patent in question can be broken down as follows:

7A: it is a composition for a recording layer in an optical information recording medium;

7B: the recording layer composition includes an organic dye allowing information to be written by means of laser light; and

7C: the recording layer composition includes a pit-edge controlling agent comprising a thermal decomposition accelerator for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C, and the thermal decomposition accelerator is selected from metallocenes and derivatives thereof.

The invention described in Exhibit A10 can be broken down as follows:

7A: it is a composition for a recording layer in an optical recording medium;

7B: the recording layer composition includes an organic dye allowing information to be written by means of laser light; and

7C': the recording layer comprises no more than 70% metallocene or the like.

Invention 7 of the patent in question and the invention described in Exhibit A10 appear to be different in that the former has constituent feature 7C (including a pit-edge controlling agent comprising a thermal decomposition accelerator, selected from metallocenes and derivatives thereof, for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C), whereas the latter has constituent feature C' (comprises no more than 70% metallocene or the like).

However, it is stated in paragraph 0053 of the Specification of the patent in question that "an amount of from 0.1 to 1000 weight parts pit-edge controlling agent per 100 weight parts dye is suitable, and an amount of 5 to 200 weight parts is more preferable." Additionally, 0.4 g pit-edge controlling agent per 2 g dye (that is, 20 wt% pit-edge controlling agent relative to the dye) is used in examples in the Specification of the patent in question.

It is therefore highly probable that the constituent feature "comprising no more than 70% metallocene or the like" in Exhibit A10 duplicates the constituent feature "including a pit-edge controlling agent comprising a thermal decomposition accelerator for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C" in Invention 7 of the patent in question.

As such, Invention 7 of the patent in question is the invention described in Exhibit A10.

(8) Claim 8

Invention 8 of the patent in question is

8C: a composition according to Claim 7, wherein the thermal decomposition accelerator lowers the temperature at which thermal decomposition of the organic dye begins by at least 25°C.

For the same reasons given regarding Invention 7 in section 7-3-4-3. (7), Invention 8 of the patent in question is the invention described in Exhibit A10.

(9) Claim 9

Invention 9 of the patent in question is

9C: a composition according to Claim 7 or 8, wherein the metallocenes and derivatives thereof comprise ferrocenes and derivatives thereof.

Because the metallocenes described in Exhibit A10 are typically ferrocenes, Invention 9 of the patent in question is the invention described in Exhibit A10.

(10) Claim 10

Invention 10 of the patent in question is

10C: a composition according to Claim 9, wherein the ferrocenes and ferrocene derivatives are any of ferrocene, benzoyl ferrocene, 1,1'-dimethylferrocene, n-butylferrocene, cyclohexenylferrocene, and vinylferrocene.

For the same reasons given regarding Invention 9 in section 7-3-4-3. (9), Invention 10 of the patent in question is the invention described in Exhibit A10.

(11) Claim 11

Invention 11 of the patent in question is

11B: a composition according to any of Claims 7 through 10, wherein the recording dye comprises a phthalocyanine compound.

Exhibit A10 describes phthalocyanine dyes as recording dyes.

Invention 11 of the patent in question is therefore the invention described in Exhibit A10.

(12) Claim 12

Invention 12 of the patent in question is

12B: the composition of Claim 11, wherein the phthalocyanine compound comprises a halogenated phthalocyanine .

Exhibit A10 describes halogenated phthalocyanine s as phthalocyanine compounds.

Invention 12 of the patent in question is therefore the invention described in Exhibit A10.

(13) Claim 13

Invention 13 of the patent in question can be broken down as follows:

13A: it is a composition according to any of Claims 7 through 12, comprising a composition for a recording layer in an optical information recording medium;

13B: a recording layer comprising an organic dye is formed into a film by means of a coating method using an organic dye film-forming solvent; and

13C: the pit-edge controlling agent is soluble in the film-forming solvent.

The invention described in Exhibit A10 can be broken down as follows:

13A: it is a composition according to any of Claims 7 through 12, comprising a composition for a recording layer in an optical information recording medium;

13B: a recording layer comprising an organic dye is formed into a film by means of a coating method using an organic dye film-forming solvent; and

13C': metallocene is used along with the organic dye.

Exhibit A10 describes dibutyl ether and the like, which are capable of dissolving the metallocene used in combination with the organic dye, as spin coating solvents.

Invention 13 of the patent in question is therefore the invention described in Exhibit A10.

(14) Claim 14

Invention 14 of the patent in question is

14A: a composition for a recording layer in an optical information recording medium, comprising a composition according to any of Claims 7 through 13 dissolved in a solvent

For the same reasons given regarding Invention 13 in section 7-3-4-3. (13), Invention 14 of the patent in question is the invention described in Exhibit A10.

(15) Claim 15

Invention 15 of the patent in question is

15A: a method for producing an optical information recording medium, comprising the steps of dissolving a composition according to any of Claims 7 through 13 in a solvent to form a coating solution, coating a transparent substrate with the resulting solution, and forming a recording layer comprising an organic dye and a pit-edge controlling agent.

Exhibit A10 describes a method for producing an optical information recording medium, comprising the steps of forming a coating solution by dissolving an organic dye in dibutyl ether, which is capable of dissolving metallocenes, and spin coating the resulting solution on a transparent

substrate to form a recording layer comprising an organic dye (Example 1). It also describes the combined use of organic dyes and metallocenes when preparing the recording layer.

Invention 15 of the patent in question is therefore the invention described in Exhibit A10.

(16) Claim 16

Invention 16 of the patent in question is

16A: a method for producing an optical information recording medium, comprising the steps of coating a transparent substrate with a composition according to Claim 14, and forming a recording layer comprising an organic dye and a pit-edge controlling agent.

For the same reasons given regarding Invention 15 in section 7-3-4-3. (15), Invention 16 of the patent in question is the invention described in Exhibit A10.

7-3-5. Improper Description in Specification

7-3-5-1. "Metallocenes and Derivatives Thereof," "Ferrocenes and Derivatives Thereof," and "Ferrocenes and Ferrocene Derivatives" in Claims 1, 3, 4, 7, 9, and 10

The meaning of "metallocene derivatives" and "ferrocene derivatives" in the expressions "metallocenes and

derivatives thereof," "ferrocenes and derivatives thereof," and "ferrocenes and ferrocene derivatives" in Claims 1, 3, 4, 7, 9, and 10 is ambiguous, or the inventions related to those Claims have not been described sufficiently in the Detailed Description of the Invention in the Specification to allow one having ordinary skill in the art to work them.

Metallocene (ferrocene) derivatives are not clearly defined in the Detailed Description of the Invention in the Specification of the patent in question. Because it is stated in paragraph 0048 in the Specification of the patent in question that metallocene compounds may have substituents, metallocene compounds could mean metallocene compounds with substituents. However, in paragraph 0048, only a few relatively small substituents such as C_1 to C_{10} alkyls are given as examples of substituents for metallocene compounds. It is not clear whether any substituents other than these can be included.

Although the term "metallocenes (ferrocenes)" can include metallocene (ferrocene) compounds with substituents from molecules larger than the metallocene (ferrocene) skeleton, it is not clear from the description in the Specification of the patent in question whether metallocene (ferrocene) compounds with such large substituents would produce the effects of the invention of the patent in

question. The patented invention has not been described in the Detailed Description of the Invention in the patent in question to allow the invention to be worked.

The description in Claims 1, 3, 7, 9, and 10, as well as claims citing those claims, cannot be regarded as describing only matters which are indispensable to the constituent feature of the invention for which the patent is being sought, and fails to comply with the requirements set forth in the Patent Law, Article 36, Section 5-2, nor can the object, constituent feature, and effects of the inventions in those claims be regarded as having been described in sufficient detail in the Detailed Description of the Invention to allow one having ordinary skill in the art to readily work the invention, in violation of the provisions of the Patent Law, Article 36, Section 4.

7-3-5-2. "Thermal decomposition accelerator for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C" and "thermal decomposition accelerator for lowering the temperature at which thermal decomposition of the organic dye begins by at least 25°C" described in Claims 1, 2, 7, and 8

The meaning of the expressions "thermal decomposition accelerator for lowering the temperature at which thermal

decomposition of the organic dye begins by at least 10°C" and "thermal decomposition accelerator for lowering the temperature at which thermal decomposition of the organic dye begins by at least 25°C" described in Claims 1, 2, 7, and 8 is ambiguous, or the inventions related to those Claims have not been described sufficiently in the Detailed Description of the Invention in the Specification to allow one having ordinary skill in the art to work them.

(1) Unclear whether property of lowering temperature at which thermal decomposition of the organic dye begins by at least 10°C (or 25°C) belongs to thermal decomposition accelerator

It is unclear whether the constituent feature comprising a thermal decomposition accelerator for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C (or 25°C) when a certain amount (such as 0.4 g per 2 g organic dye, as noted in the examples) of a thermal decomposition accelerator is added to the organic dye means a thermal decomposition accelerator that lowers the temperature at which thermal decomposition of the organic dye begins by at least 10°C (or 25°C) (which would mean the thermal decomposition accelerator is a substance having the property of lowering the temperature at

which thermal decomposition of the dye begins by at least 10°C (or 25°C)), or means that a thermal decomposition accelerator is a certain substance that, in an amount at or beyond a given amount, lowers the temperature at which thermal decomposition of the organic dye begins by 10°C (or 25°C), the substance being added gradually.

It is stated in Example 1 in the Specification of the patent in question that when 0.4 g ferrocene was added per 2.0 g phthalocyanine dye of [Chemical Formula 5], the temperature at which thermal decomposition of the dye began decreased about 50°C. Let us assume that, when 0.1 g ferrocene is added per 2.0 g phthalocyanine dye of [Chemical Formula 5], the temperature at which thermal decomposition of the dye begins would decrease 5°C. In this case, it is unclear whether or not 0.1 g ferrocene added to 2.0 g phthalocyanine dye of [Chemical Formula 5] would correspond to a thermal decomposition accelerator that lowers the temperature at which thermal decomposition of the organic dye begins by at least 10°C (or 25°C).

(2) Ambiguous Scope of Thermal Decomposition Accelerator In Cases of Multiple Organic Dyes

It is stated in the Specification of the patent in question that multiple organic dyes may be used (paragraph 0040). When two types of organic dyes (organic dye A and organic dye B) are used, it is unclear whether "a thermal decomposition accelerator for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C (or 25°C)" would mean a thermal decomposition accelerator for lowering the temperature at which the thermal decomposition of the mixture of organic dyes A and B begins by at least 10°C (or 25°C), or a thermal decomposition accelerator for lowering the temperature at which thermal decomposition of the organic dye A begins by at least 10°C (or 25°C) and for lowering the temperature at which thermal decomposition of the organic dye B begins by at least 10°C (or 25°C), or a thermal decomposition accelerator for lowering the temperature at which thermal decomposition of at least one of organic dyes A and B begins by at least 10°C (or 25°C).

(3) Ambiguous Scope of Thermal Decomposition Accelerator In Cases Where Thermal Decomposition Accelerator Is Also An Organic Dye

A metallocene-substituted azulenium salt compound is described as a dye allowing information to be written by laser light in Exhibit A11 (Japanese Unexamined Patent Application (Kokai) S61-179792) (Claims 1 and 2, lines 7 to 13 in upper right column). This compound is an organic dye allowing information to be written by means of laser light, and is a metallocene derivative. Organic dyes in the invention of the patent in question can encompass metallocene-substituted organic dyes which can be included in metallocene derivatives, such as the above metallocene-substituted azulenium salt compound. It is unclear how the decrease in the temperature at which thermal decomposition of the organic dye begins would be measured in recording layers or compositions for recording layers comprising only such a metallocene-derived organic dye.

It is also unclear how the decrease in the temperature at which thermal decomposition of the organic dye begins would be measured in recording layers or compositions for recording layers comprising an organic dye A and a metallocene-substituted organic dye B.

(4) Ambiguous Scope of Thermal Decomposition Accelerator In Cases of Thermal Decomposition Accelerators

It is stated in the Specification of the patent in question that multiple thermal decomposition accelerators may be used (paragraph 0048). In cases featuring the combined use of two different types of thermal decomposition accelerators A and B, it is unclear whether "a thermal decomposition accelerator for lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C (or 25°C)" would mean that the mixture of thermal decomposition accelerators A and B lowers the temperature at which the thermal decomposition of the organic dye begins by at least 10°C (or 25°C), or that both thermal decomposition accelerators A and B lower the temperature at which thermal decomposition of the organic dye begins by at least 10°C (or 25°C), or that at least one of thermal decomposition accelerators A and B lowers the temperature at which thermal decomposition of the organic dye begins by at least 10°C (or 25°C).

(5) The description in Claims 1, 2, 7, and 8, as well as claims citing those claims, therefore cannot be regarded as describing only matters which are indispensable to the constituent feature of the invention for which the patent is being sought, and fails to comply with the requirements set

forth in the Patent Law, Article 36, Section 5-2, nor can the object, features, and effects of the inventions in those claims be regarded as having been described in sufficient detail in the Detailed Description of the Invention to allow one having ordinary skill in the art to readily work the invention, in violation of the provisions of the Patent Law, Article 36, Section 4.

7-2-5-3. The inventions in Claims 1 through 16 include inventions which do not result in the effect of the invention of the patent in question.

(1) An object of the invention of the patent in question is to provide a CD-r medium with favorable recording properties (paragraph 0115). However, the inventions in Claims 1 through 16 include inventions which do not result in this effect.

According to the following results of tests conducted by the Demandant, a CD-R with favorable recording properties is not obtained when the weight ratio between metallocene derivatives and organic dyes is 1:1, 5:1, or 13.3:1, even though the recording medium meets all the requirements described in Claim 1 of the patent in question.

According to the following test results, an organic dye to pit-edge controlling agent weight ratio of 1:9 to 1:4

(that is, 0.11 to 0.25:1) results in a useful disc giving the effect of the invention of the patent in question, that is, a disc with low BLER as well as Sp and S1 no greater than 70 ns. However, a weight ratio of 1:1 or 13.3:1 did not result in a useful disc giving the effect of the invention of the patent in question.

Although the results obtained with a pit-edge controlling agent-to-dye weight ratio of 0.11:1 or less was not investigated, it may be assumed that a useful disc would not be obtained.

The invention of the patent in question thus includes components that do not give the effect of the invention of the patent in question. According to the test results by the Demandant, the invention of the patent in question provides the results described in the Specification only when the pit-edge controlling agent-to-dye weight ratio is 0.11:1 to 0.25:1, whereas according to the examples in the Specification of the patent in question, the effect is obtained only with a pit-edge controlling agent-to-dye weight ratio of 0.4 g:2.0 g (that is, 0.2:1).

Test Results

1. Purpose of Tests

The tests were conducted to check how the weight ratio of the organic dye and pit-edge controlling agent in the invention of the patent in question influenced the effect of the invention of the patent in question.

2. Test Methodology

Tests were basically conducted according to Examples 3-2 and 3-3 in the Specification of the patent in question. HR-250, a commercially available phthalocyanine dye by Mitsui Chemicals was used. HR-250 is a mixture of the phthalocyanine dye described in Example 3-1 in the Specification of the invention in the patent in question and a phthalocyanine having the same structure. This dye differed from the phthalocyanine dye described in Example 3-1 in the Specification of the invention in the patent in question by having 4 instead of 3 bromine atoms. HR-250 was used because it was readily available and because it was felt that the tests in Examples 3-2 and 3-3 in the Specification of the patent in question could be replicated within an acceptable range.

The weight ratio between the pit-edge controlling agent and the organic dye, and the temperature at which thermal decomposition began, are given below.

benzoylferrocene (weight parts)	HR-250 (weight parts)	weight ratio	temperature at which thermal decomposition begins (°C)	Abbreviation
0	3	0:10 (0:1)	343	BF 0
0.3	2.7	1:9 (0.11:1)	280	BF 0.3
0.6	2.4	1:4 (0.25:1)	256	BF 0.6
1.5	1.5	1:1	252	BF 1.5
2.5	0.5	5:1	258	BF 2.5
1,1-dimethylferrocene 2.79	0.21	13.3:1	125	1,1 DMF 2.79

Discs were recorded by initial setting with a Pulstec 2 (6 mW) (same power as in Examples 3-2 and 3-3 in the Specification of the invention in question), and the results were read by CDCATS. The Sp and S1 values were calculated using 5B disc deviation as the standard.

3. Results

(1) Spin Coating

Spin coating was managed using a 3 wt% liquid of an organic dye/pit-edge controlling agent mixture in dibutyl ether/2,6-dimethyl-4-heptanone (97:3). Dibutyl ether was used in Example 2 in the Specification of the patent in

question, and was the main component of the mixture used here. This slight modification was not considered problematic, and Examples 3-2 and 3-3 in the Specification of the patent in question could be reproduced without any problems.

BF 0.3, BF 0.6, and BF 1.5 could be spin coated, but the test disc for BF 1.5 had extremely low optical density and high groove fill. BF 2.5 could not provide an optical density (OPD) of 120 or more, even with an approximately 30-second cycle time (this is absolutely not useful for industrial processes). It is therefore not noted in Table 1.

(2) Temperature at Which Thermal Decomposition Began

The temperature at which thermal decomposition of BF 0 began was 343°C, whereas the temperatures for BF 0.3, BF 0.6, BF 1.5, BF 2.5, and 1,1-DMF 2.79 were 280, 256, 252, 258, and 125°C, respectively. In all cases, the thermal decomposition accelerator lowered the temperature at which thermal decomposition of the organic dyes began by at least 10 or 25°C.

(3) Recording

The BF 0.3, BF 0.6, and BF 1.5 discs could be recorded on with Pulstec. However, BF 2.5 and 1,1-DMF 2.79 discs could not.

(4) Reading Test

Recording discs with an optical density of up to 0.42 were read on CDCATS as being unwritten. That is, no signal could be detected (see BF 1.5 in Table 1). Recording discs with an optical density up to 0.435 failed at jitter and deviation recording (see BF 1.5 (that is, weight ratio of 1:1 between pit-edge controlling agent and organic dye) in Table 1).

However, discs with an optical density of 0.57 to 0.7 showed acceptable Sp and S1 levels (see BF 0.3 and BF 0.6 (that is, weight ratio of 1:9 to 1:4 between pit-edge controlling agent and organic dye) in Table 1).

BF 2.5 and 1,1-DMF 2.79, of course, could not be read.

Table 1

[legends, left to right, top to bottom]

optical density

absorbance

optical density

Deviation

jitter reading failure

jitter reading failure

jitter reading failure

reading failure

reading failure

No spinning possible with high optical density - inoperable in recording meter or test device.

The above test results and the description in the paragraph 0053 of the Specification of the patent in question stating that "the ratio in which the organic dye and pit-edge controlling agent used for recording here are mixed ranges from 0.1 to 1000 weight parts, and preferably 5 to 200 weight parts, per 100 weight parts dye" are shown in the following Figure 1.

FIGURE 1

[legends, top to bottom, left to right]

Importance of metallocene/organic dye weight ratio

range stipulated in claim (unlimited)

suitable range

more desirable range

tested by Ciba

Single example by Mitsui

range within which no useful discs were obtained in tests by Ciba

Based on Figure 1, no useful discs can be obtained with a pit-edge controlling agent:organic dye weight ratio ranging between at least 1:1 and 13.3:1. Claims 1 through 16 of the patent in question which include these weight ratios therefore include unworkable components.

Claims 1 through 16 of the patent in question therefore cannot be regarded as describing only matters which are indispensable to the constitution of the invention for which the patent is being sought, and fail to comply with the

requirements set forth in the Patent Law, Article 36, Section 5-2, nor can the object, features, and effects of the inventions in those claims be regarded as having been described in sufficient detail to allow one having ordinary skill in the art to readily work the invention. The provisions of the Patent Law, Article 36, Section 4 have therefore been violated.

(2) It cannot be ascertained that all of the thermal decomposition accelerators for "lowering the temperature at which thermal decomposition of the organic dye begins by at least 10°C (or 25°C)" in Claims 1, 2 and so on provide the effect of the invention in question.

Only a thermal decomposition accelerator lowering the temperature at which thermal decomposition of the organic dye begins by at least 40°C was confirmed to give the effect of the invention of the patent in question in the examples of the Specification in the patent in question.

When a phthalocyanine dye of [Chemical Formula 5] had a thermal decomposition starting temperature of 350°C in an example in the Specification of the patent in question (Comparative Example 1-1), the addition of 0.4 g ferrocene per 2 g dye lowered the decomposition temperature by 55°C to

295°C (Example 1). When a thermal decomposition accelerator for lowering the temperature at which the thermal decomposition of the dye began by 10°C was added to a phthalocyanine dye of [Chemical Formula 5], the thermal decomposition starting temperature was changed to 340°C, thus satisfying the stipulations of Claim 1 in the patent in question. Because the thermal decomposition starting temperature of 340°C was considerably higher than the thermal decomposition starting temperatures of 295 to 305°C in Comparative Examples 2, 3-1, and 3-2, it is hard to believe that such a combination of organic dyes and thermal decomposition accelerators would give the effect of the invention of the patent in question.

The use of a thermal decomposition accelerator for lowering the temperature at which thermal decomposition of organic dyes begins by 10 to 40°C cannot be said to provide the effect of the invention of the patent in question.

Claims 1 through 16 cannot be regarded as describing only matters which are indispensable to the constitution of the invention for which the patent is being sought, and fail to comply with the requirements set forth in the Patent Law, Article 36, Section 5-2, nor can the object, features, and effects of the inventions in those claims be regarded as

having been described in sufficient detail to allow one having ordinary skill in the art to readily work the invention. The patent relating to these inventions therefore fails to comply with the provisions of the Patent Law, Article 36, Section 4.

(3) Given that no temperature at which the thermal decomposition of the organic dye itself begins is stipulated in Claim 1 of the patent in question, it is not clear from the description in the Specification of the patent in question whether all the organic dyes with varying thermal decomposition starting temperatures provide the effect of the invention of the patent in question.

When an organic dye A has a thermal decomposition starting temperature of 350°C, the addition of a thermal decomposition accelerator that lowers the temperature at which the thermal decomposition of the organic dye begins by 10°C results in an organic dye thermal decomposition starting temperature of 340°C. This case (Case A) meets complies with the structure in Claim 1 of the patent in question.

When an organic dye B has a thermal decomposition starting temperature of 295°C, the addition of a thermal

decomposition accelerator that increases the thermal decomposition starting temperature by 10°C to the dye results in an organic dye thermal decomposition starting temperature of 305°C (Comparative Examples 3-1 and 3-2 in the Specification of the patent in question). This case (Case B) does not comply with the structure in Claim 1 of the patent in question.

The action of the "pit-edge controlling agent" comprising a thermal decomposition accelerator in the invention of the patent in question is "to affect and change the recording threshold level of the recording layer." In Case A, it is possible "to affect and change the recording threshold level of the recording layer" while having a thermal decomposition starting temperature of 340°C, whereas in Case B, it is not possible "to affect and change the recording threshold level of the recording layer" despite having a thermal decomposition starting temperature of 305°C. This result is contradictory when considered on the basis of the action of the pit-edge controlling agent in the invention of the patent in question.

The action of "affecting and changing the recording threshold level of the recording layer" to provide the effect of the invention of the patent in question therefore

cannot be expected in the invention of the patent in question unless the range of the organic dye thermal decomposition starting temperature is limited.

Claims 1 through 16 therefore cannot be regarded as describing only matters which are indispensable to the structure of the invention for which the patent is being sought, and fail to comply with the requirements set forth in the Patent Law, Article 36, Section 5-2, nor can the object, features, and effects of the inventions in those claims be regarded as having been described in sufficient detail to allow one having ordinary skill in the art to readily work the invention. The patent relating to these inventions therefore fails to comply with the provisions of the Patent Law, Article 36, Section 4.

7-3-6. Conclusion

These conclusions have therefore been reached as described in 7-2. Key Points in Reasons for Invalidating Patent.

8. Evidence

(1) Exhibit A1 (Japanese Unexamined Patent Application (Kokai) S63-209042)

(2) Exhibit A2 (Japanese Unexamined Patent Application (Kokai) S63-168393)

(3) Exhibit A3 (Japanese Unexamined Patent Application (Kokai) H2-43396)

(4) Exhibit A4 (Japanese Unexamined Patent Application (Kokai) H2-103190)

(5) Exhibit A5 (Japanese Unexamined Patent Application (Kokai) H3-224792)

(6) Exhibit A6 (Japanese Unexamined Patent Application (Kokai) H4-336282)

(7) Exhibit A7 (Bull. Chem. Soc. Jpn., 55, 2753-2759 (1982)))

(8) Exhibit A8 (Japanese Patent Application (Kokai) H04-323433)

(9) Exhibit A9 (Japanese Patent Application (Kokai) H05-102148)

(10) Exhibit A10 (Japanese Patent Application (Kokai) H6-243506

(11) Exhibit A11 (Japanese Patent Application (Kokai) S61-179792

9. List of Attached Documents

(1) Exhibit A1 1 true copy, 3 duplicates

(2) Exhibit A2 1 true copy, 3 duplicates

(3) Exhibit A3 1 true copy, 3 duplicates

(4) Exhibit A4 1 true copy, 3 duplicates

(5) Exhibit A5 1 true copy, 3 duplicates

(6) Exhibit A6 1 true copy, 3 duplicates

(7) Exhibit A7 1 true copy, 3 duplicates

(8) Exhibit A8 1 true copy, 3 duplicates

(9) Exhibit A9 1 true copy, 3 duplicates

(10) Exhibit A10 1 true copy, 3 duplicates

(11) Exhibit A11 1 true copy, 3 duplicates

(12) Written Appeal 3 duplicates

(13) Power of Attorney 9708246